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10/628,385

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EXAMINER

VO, TUNG T

ART UNIT

PAPER NUMBER

2621

NOTIFICATION DATE

DELIVERY MODE

08/10/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/628,385

Applicant(s)

GHANBARI ET AL.

Examiner

Tung Vo

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/15/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. Claims 1-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 15 defines a computer program embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed a computer program can range from paper on which the program is written, to a program simply contemplated and memorized by a person.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-7, and 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Hwang (US 5,781,249).

Re claim 1, Hwang disclose a method of approximating a motion vector for an image block (fig. 1) comprising deriving a first set of vectors from motion vectors of neighbouring blocks in the same frame and the corresponding block and its neighbouring blocks in one or more preceding and/or subsequent frames (100 of fig. 1, col. 3, line 25-col. 4, line 33, Note where the motion vectors are stored in the motion vector memory (110 of fig. 2), col. 4, lines 32-40), deriving a set of candidate vectors from one or more of motion vectors of neighbouring blocks in the same frame and the corresponding block and its neighbouring blocks in one or more preceding and/or subsequent frames (120 of fig. 2; col. 4, line 53-col. 5, line 10), analyzing said first set of vectors (130 of fig. 2), and selecting one of the candidate vectors on the basis of the analysis (col. 5, lines 40-47).

Re claim 2, Hwang further discloses comparing candidate vectors with a vector or vectors selected or derived from the first set of vectors (132, 134, and 136 of fig. 3).

Re claim 3, Hwang further discloses wherein the first set of vectors and the set of candidate vectors are the same (col. 5, lines 15-28).

Re claim 4, Hwang further discloses deriving an estimated motion vector from the first set of vectors, comparing the candidate vectors with the estimated motion vector (136 of fig. 3) and selecting one of the candidate vectors on the basis of similarity to said estimated vector (col. 5, lines 40-48).

Re claim 5, Hwang further discloses wherein the similarity to the estimated vector is defined in terms of distance and/or size and/or direction (fig. 4).

Re claim 6, Hwang further discloses wherein the vector that is closest or second closest to the estimated vector is selected (col. 3, lines 28-36).

Art Unit: 2621

Re claim 7, Hwang further discloses wherein the estimated motion vector is the mean of two or more or all of the elements of said first set (col. 3, lines 37-57).

Re claims 10 and 11, Hwang further discloses a method as claimed in any preceding claim wherein the selection takes into account motion boundaries; and comparing the motion vectors of neighbouring image blocks in the same frame with the corresponding motion vectors in the preceding or subsequent frame, and determining the approximation of motion vector according to the results of the comparison (fig. 4, col. 3, lines 38-57).

Re claim 12, Hwang further disclose approximating the motion vector using the motion vector of the corresponding block in the preceding or subsequent frame when said comparison indicates a high correlation between the neighbouring motion vectors (col. 4, lines 60-col. 5, line 6, Note a maximum directivity) in the preceding or subsequent frame (col. 3, lines 25-37).

Re claim 13, Hwang further discloses approximating the motion vector using motion vectors for neighbouring blocks in the same frame when said comparison indicates a low correlation between frames (col. 4, line 60-67, Note a minimum directivity).

Re claim 14, Hwang discloses approximating the motion vector using motion vectors from neighbouring blocks in the same frame and motion vectors in the preceding or subsequent frame (fig. 4, col. 3, lines 25-57).

4. Claims 1- 11, and 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Chan (US 6,865,227).

Re claim 1, Chan discloses an apparatus for carrying out a method of approximating a motion vector (fig. 5) for an image block comprising deriving a first set of vectors from motion

Art Unit: 2621

vectors of neighboring blocks in the same frame and the corresponding block and its neighboring blocks in one or more preceding and/or subsequent frames (504 and 506 of fig. 5), deriving a set of candidate vectors from one or more of motion vectors of neighboring blocks in the same frame and the corresponding block and its neighboring blocks in one or more preceding and/or subsequent frames (col. 2, lines 42-62, 508 of fig. 5), analyzing said first set of vectors (510 of fig. 1), and selecting one of the candidate vectors on the basis of the analysis (512 of fig. 5, see also figs. 1A and 1B).

Re claim 2, Chan further discloses comparing candidate vectors with a vector or vectors selected or derived from the first set of vectors (510 of fig. 5).

Re claim 3, Chan further disclose wherein the first set of vectors and the set of candidate vectors are the same (122 of fig. 1B).

Re claim 4, Chan further discloses deriving an estimated motion vector from the first set of vectors, comparing the candidate vectors with the estimated motion vector and selecting one of the candidate vectors on the basis of similarity to said estimated vector (506 of fig. 5).

Re claim 5, Chan further discloses wherein the similarity to the estimated vector is defined in terms of distance and/or size and/or direction (reverse directions, 120 of fig. 1B).

Re claim 6, Chan further discloses wherein the vector that is closest or second closest to the estimated vector is selected (510 of fig. 5).

Re claim 7, Chan further discloses wherein the estimated motion vector is the mean of two or more or all of the elements of said first set (fig. 3).

Re claim 8, Chan further discloses wherein the mean is a weighted mean (col. 3, lines 43-45).

Re claim 9, Chan further disclose wherein motion vectors of neighboring blocks are weighted according to their position in relation to said image block and/or their similarity to the motion vector of the block corresponding to said image block in the preceding or subsequent frame (col. 3, lines 36-49).

Re claim 10, Chan further discloses wherein the selection takes into account motion boundaries (col. 3, lines 59-64).

Re claim 11, Chan further discloses wherein said analysis comprises comparing the motion vectors of neighboring image blocks in the same frame with the corresponding motion vectors in the preceding or subsequent frame, and determining the approximation of motion vector according to the results of the comparison (col. 4, lines 17-57).

Re claim 14, Chan further disclose approximating the motion vector using motion vectors from neighboring blocks in the same frame and motion vectors in the preceding or subsequent frame (fig. 3).

Re claim 17, Chan further discloses an apparatus adapted to execute a method as claimed in claim 1 (fig. 5).

Re claim 18, Chan further discloses a data decoding means, error detecting means, a motion vector estimator and error concealing means (fig. 5).

Re claim 19, Chan further a receiver for a communication system or a system for retrieving stored data comprising an apparatus (fig. 5).

5. Claims 1 and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Choi (US 6,690,730).

Art Unit: 2621

Re claims 1 and 15-17, Choi discloses an apparatus (figs. 2 and 11) for carrying out a method of approximating a motion vector (210 and 212 of fig. 2) for an image block comprising deriving a first set of vectors from motion vectors of neighboring blocks in the same frame and the corresponding block and its neighboring blocks in one or more preceding and/or subsequent frames (col. 9, lines 28-30), deriving a set of candidate vectors from one or more of motion vectors of neighboring blocks in the same frame and the corresponding block and its neighboring blocks in one or more preceding and/or subsequent frames (250 of fig. 2, see also fig. 11), analyzing said first set of vectors (110 of fig. 11), and selecting one of the candidate vectors on the basis of the analysis (1102 of fig. 11; Col. 9, line39-47); a computer program for executing a method (260 of fig. 1); a data storage medium storing a computer program DMA (260 of fig. 2); an apparatus (figs 2 and 11) adapted to execute a method in claim 1.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Jung (US 5,596,370).

Re claim 1, Jung discloses a method of approximating a motion vector for an image block (fig. 1A and 1B)) comprising deriving a first set of vectors from motion vectors of neighboring blocks in the same frame and the corresponding block and its neighboring blocks in one or more preceding and/or subsequent frames, deriving a set of candidate vectors from one or more of motion vectors of neighboring blocks in the same frame and the corresponding block and its neighboring blocks in one or more preceding and/or subsequent frames, analyzing said first set of vectors, and selecting one of the candidate vectors on the basis of the analysis.

Art Unit: 2621

7. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Rovati et al. (US 6,724,823).

Re claim 1, Rovati discloses a method of approximating a motion vector for an image block comprising deriving a first set of vectors from motion vectors of neighboring blocks in the same frame and the corresponding block and its neighboring blocks in one or more preceding and/or subsequent frames, deriving a set of candidate vectors from one or more of motion vectors of neighboring blocks in the same frame and the corresponding block and its neighboring blocks in one or more preceding and/or subsequent frames, and selecting one of the candidate vectors on the basis of the analysis (fig. 3).

8. Claims 1-14, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim (US 6,947,603).

Re claim 1, Kim discloses a method (figs. 1-4) of approximating a motion vector (110 of fig. 1) for an image block comprising deriving a first set of vectors from motion vectors of neighbouring blocks in the same frame and the corresponding block and its neighbouring blocks in one or more preceding and/or subsequent frames (col. 3, lines 16-20, 57-62; fig. 4), deriving (220 of fig. 2) a set of candidate vectors from one or more of motion vectors of neighbouring blocks in the same frame and the corresponding block and its neighbouring blocks in one or more preceding and/or subsequent frames (col. 3, lines 63-col. 4, line 37), analysing said first set of vectors (col. 4, lines 38-49), and selecting (120 of fig. 1) one of the candidate vectors on the basis of the analysis (col. 4, line 50-col. 5, line2).

Re claim 2, Kim further discloses comparing candidate vectors with a vector or vectors selected or derived from the first set of vectors (230 of fig. 2; col. 4, lines 38-49)

Re claim 3, Kim further discloses wherein the first set of vectors and the set of candidate vectors are the same (col. 3, lines 58-62).

Re claim 4, Kim further discloses deriving an estimated motion vector from the first set of vectors, comparing the candidate vectors with the estimated motion vector and selecting one of the candidate vectors on the basis of similarity to said estimated vector (col. 4, line 50-col. 5 line 2).

Re claim 5, Kim further discloses wherein the similarity to the estimated vector is defined in terms of distance and/or size and/or direction (fig. 4).

Re claim 6, Kim further discloses wherein the vector that is closest or second closest to the estimated vector is selected (col. 6, lines 8-13).

Re claim 7, Kim further discloses wherein the estimated motion vector is the mean of two or more or all of the elements of said first set (col. 4, lines 22-27).

Re claim 8, Kim further discloses wherein the mean is a weighted mean (col. 4, lines 24-26).

Re claim 9, Kim further discloses wherein motion vectors of neighbouring blocks are weighted according to their position in relation to said image block and/or their similarity to the motion vector of the block corresponding to said image block in the preceding or subsequent frame (col. 4, lines 21-33; fig. 4).

Re claim 10, Kim further discloses wherein the selection takes into account motion boundaries (320, 430, and 440 of fig. 4).

Re claim 11, Kim further discloses wherein said analysis comprises comparing the motion vectors of neighbouring image blocks in the same frame with the corresponding motion vectors in the preceding or subsequent frame, and determining the approximation of motion vector according to the results of the comparison (col. 4, lines 37-41; fig. 4 and fig. 5).

Re claim 12, Kim further discloses approximating the motion vector using the motion vector of the corresponding block in the preceding or subsequent frame when said comparison indicates a high correlation between the neighbouring motion vectors in the preceding or subsequent frame (HSBMA, 250 of fig. 2).

Re claim 13, Kim further discloses approximating the motion vector using motion vectors for neighbouring blocks in the same frame when said comparison indicates a low correlation between frames (OPGS, 240 of fig. 2).

Re claim 14, Kim further discloses approximating the motion vector using motion vectors from neighbouring blocks in the same frame and motion vectors in the preceding or subsequent frame (fig. 4).

Re claim 17, Kim further discloses apparatus adapted to execute a method (fig. 1)

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2621

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US 6,947,603) in view of Lainema (US 6,782,053).

Re claim 20, Kim does not disclose a receiver is a mobile videophone. However, Lainema teaches a receiver is a mobile video phone (fig. 1). Therefore, one skill in the art would obviously combine the teachings of Lainema and Kim to implement into a mobile phone. Doing so would provide an improved method for coding video frames, an improved video coder and an improved subscriber terminal.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Park (US 6,21,383) discloses a method and apparatus for selectively detecting motion vectors of a wavelet transformed video signal.

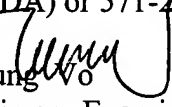
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Tung Vo
Primary Examiner
Art Unit 2621